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Guided left ventricular lead placement for cardiac resynchronisation therapy - an opportunity for image integration.

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Dear Editors

We read with interest two manuscripts in this months' edition of the journal both exploring the effect of a multi modality imaging approach to guide LV lead implantation for delivery of cardiac resynchronisation therapy (CRT). Suboptimal LV lead positioning is a well established contributor to poor CRT response and as such, techniques utilising cardiac imaging to avoid areas of myocardial fibrosis(1) and / or target dyssynchrony (2) have been of great interest. The studies by Sommer et al (3) and Bertini et al (4) take an interesting approach by combining the strengths of different imaging modalities to guide LV lead placement and in doing so, reporting a reduction in the proportion of patients with a suboptimal response to CRT.

Whilst these results are certainly encouraging, one of the major limitations is that the data output from the imaging modality in each study is reviewed separate to, and alongside X-Ray rather than integrated together. Given the radiolucency of the cardiac silhouette and high variability in the rotation of the left and right sided chambers relative to one another, it is not altogether surprising that using fluoroscopy to determine regional anatomy can be highly inaccurate, particularly with regard to CRT and lead position(5). The next logical step is the co-registration of cardiac imaging data with X-Ray; the resulting visual integration likely to facilitate more accurate image guidance for cardiac procedures. Our group has indeed, designed a purpose built platform which permits real-time cardiac MRI defined scar and dyssynchrony in order to guide LV lead implantation(6). Rapidly evolving technology is enabling real-time image fusion to become a reality for an increasing number of cardiac centres using cardiac MRI, echocardiography and electro-anatomical mapping; future image guided CRT studies should incorporate this highly valuable and translational clinical application.

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